

Work Order ID 55511

January 19, 2010 2:25:35 PM



Page 1

Item ID: D350-748-101

Accept



Setup Start



Revision ID:

Item Name: Crosstube Installation, High Fwd

Stop



Start Date: 1/20/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 2/9/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: MF

Date: 10-1-19

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D350-748-141	Rev E								
100		0.00							
	DOCUMENT CONTROL								
DC	Memo	0.00							
Document Control	Photocopy bluefile & type labels per PPPD350-748								
110		0.00							
	BENDING MACHINE - CROSSTUBES								
CNC Bend 1	Memo	0.00							
CNC Delta 100 Bender	Bend tube as per Dwg D350-748-141 using CNC bender program D350F and Folio FT								
120		0.00							
	QC15- Crosstube Dimensional Check								
QC	Memo	0.00							
Quality Control									

5.10.06/20

10/8/19

10.06.01

10.06.01

PTO

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D350-748-101 PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: 10/08/18 Date: 10/08/18

Resolution: _____ Disposition: _____ QA: NCR Closed. _____ Date: _____

NCR: 55511		WORK ORDER FOR CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10.08.18	KU	Damage to CAD plate due to transport accident REF NCR 10-308	CP 10.08.18 OSI 042	Touch up CAD plate per KA-D350-748. CHAPTER 5.	See next page	D 10/08/18	CP 10.08.18 OSI 042	/

NOTE: Date & initial all entries

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Jul-05-2010

CONSIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 96454

INVOICE #: 50228

**CONTRACT OR
PURCHASE ORDER #**

12043

DESCRIPTION: SKID

QTY

1

P/N # d350-748-101

S/N # B55511

**STRESS RELIEF HEAT CHART #10-639. MPI IAW ASTM-E-1444.
CADMIUM PLATE IAW AMS-QQ-P-416B TYPE 2 YELLOW CLASS 1.
BAKE HEAT CHART # 10-686.**

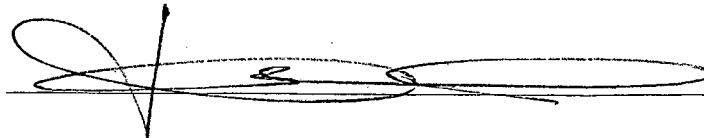
Diolok / tubes Damaged During

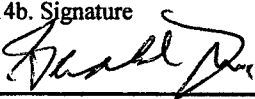

transport

See next page

**CERTIFICATE: I certify that the items indicated here on have
been inspected and tested and conform to all specifications
and requirements detailed on the contract or purchase order.**

Approved Inspector:



1. Approving Civil Aviation Authority/Country Transport Canada		2. AUTHORIZED RELEASE CERTIFICATE FORM ONE			3. Form tracking No. HTV-2635 Page 1 of 1	
4. Approved organization name and address HELITRADES INC. 18 Terry Fox Drive, Vankleek Hill, Ontario, K0B 1R0, Canada					5. Work order/contract/invoice H-16610	
6. Item 1	7. Description CROSSTUBE	8. Part No. <u>D350-748-101</u>	9. Qty 2	10. Serial/Batch No. 55509 <u>55511</u>	11. Status/work REPAIRED	
12. Remarks BRUSH CADMIUM PLATING REPAIR CARRIED OUT I.A.W. THE DART AEROSPACE ICA-D350-748 PAGE 9 OF 19 REV.1. DOCUMENTATION FOR ALL WORK PERFORMED IS AVAILABLE ON FILE UNDER HELITRADES W/O SPECIFIED IN BLOCK # 5.						
13a. Certifies that the items identified above were manufactured in conformity to: <input type="checkbox"/> Approved design data and are in condition for safe operation. <input type="checkbox"/> Non approved design data specified in block 12.			14a. <input checked="" type="checkbox"/> CAR 571.10 Maintenance Release. <input type="checkbox"/> Other regulations specified in block 12. Certifies that, except where otherwise specified in block 12, the work identified in block 11 and described in block 12 was performed in accordance with the Canadian Aviation Regulations.			
13b. Signature		13c. Approved Organization Number		14b. Signature  		14c. Approved Organization Number AMO 3/86
13d. Name		13e. Date (dd/mm/yyyy)		14d. Name GERALD TOM		14e. Date (dd/mm/yyyy) 17-Aug-10
<p>"This certificate does not constitute authority to install. Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified. Statements in blocks 13a or 14a do not constitute installation certification. In all cases, the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown."</p>						

(Previously form 24-0078)

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Required Date: 2/9/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Crosstubes	0.00							
Crosstubes									
Crosstubes									
	Memo	0.00							
	1-Drill Tube as per Dwg D350-748-141 Using DT8876 A,B & C Drill Jigs, Set-up drill table as per QSI 010								
	2-Deburr								
	3-Engrave Part # and Batch # as per Dwg D350-748-141								
	4-Remove all marks from tube within limits of D350-748-141								
	5- Apply a light coat of LPS3 on the interior of tube Batch: _____								
140	QC5- Inspect part completeness to step on W/O	0.00							
QC									
Quality Control									
	Memo	0.00							
	CHECK 10 DEG HOLES WITH DT8876E (EUROCOPTER CLAMP)								

IMP 10-06-03

AWM 10-06-04

8 10/04/19

tubes were sent to be inspected
with inspection of holes

W/O:		WORK ORDER CHANGES					
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Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

150

Outsource process-Cadplate per QSI017 4.1.9.1

0.00



Outsource3

Memo

0.00

Outsource process - Cad plate

Issue P/O:

12043

Stress relief at 375° for 5 hours

Magnetic Particle Inspect per ASTM E1444

Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2

Embrittle relief at 375° for 8 hours, Chromate Treat

Possible Supplier: Southwest United Industries

Ensure Certificate of Conformity is attached

CL 10/6/8 1

160

Receive & Inspect for Damage & Mat'l Certs

0.00



Packaging

Memo

0.00

Packaging

Ensure certificate of conformity is attached

CL 10/8/09 1

170

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/02/19

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Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 	SprayPaint	0.00							
SprayPaint	Memo	0.00							
Spray Painting	1-Prime inside crosstube as per QSI 005 4.2 2-Prime Outside of Tube as per Dart QSI 005 4.2								
190 	QC14- Inspect Spray Paint	0.00							
QC	Memo	0.00							
Quality Control	Then, Wrap in plastic bag to protect from scratches								
200 	Crosstubes	0.00							
Crosstubes	Memo	0.00							
Crosstubes	1-Install Ground wire Insert, then insert screw and washer 2-Install Abraison strips as per Dwg D350-748-141 & QSI 035. 3-Install supports Using Dt8876 as per Dwg D350-748-141, Torque to 60-80 IN-LBS								

BT 10-08-18 (X)

ml 10 08 19 U

BT 10-08-19

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: > _____ NCR: Yes No DQA: _____ Date: _____

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Required Date: 2/9/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00

8/10/08/19



QC

Memo

0.00

Quality Control

10

220

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

10/18/2008

230

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

8/10/08/20

W/O:		WORK ORDER CHANGES					
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Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240		0.00							
	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D350-748-101								
	Location: _____								
	PPP Rev: <u>B</u>								
250	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00							
Quality Control									

10/8/20

SP

10/08/23

mf
10-8-20

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Picklist Print

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Page 1

Work Order ID: 55511

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

Comments: IPP Rev:A New Issue 06-07-05 JLM
IPP Rev:B Update qty of MS21042L5 06-09-12 KJ
IPP Rev:C Rev B 07-11-15 DD
IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Date: 1/20/2010

Required Date: 2/9/2010

Start Qty: 1.00

Required Qty: 1.00

D350-748-141TRN

Manufactured No

110

Each

5.0000

1.0000



Crosstube Turning Detail

B-55295 MB 10-05-31

Warehouse
Location

Main Warehouse

FG

5

37995

1

37999

1

40099

1

40103

1

50622

1

ALS4-1032-225

Purchased No

200

Each

6,686.000

1.0000



Insert

RT 10-08-19

Warehouse
Location

Main Warehouse

ST

6686

107441

16

110768

6670

AN960JD10

Purchased No

200

Each

0.0000

1.0000



Washer

m 115107

RT 10-08-19

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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 IPP Rev:C Rev B 07-11-15 DD
 IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Date: 1/20/2010

Required Date: 2/9/2010

Start Qty: 1.00

Required Qty: 1.00

D2856-400

Manufactured No

200

f

290.3921

1.2432



Abraison Strip

356626 + 1.2432



25 10-08-19

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST403

290.3920842

50593

141.312084

52563

149.08

Manufactured No

~~200~~
220 Each

46.0000

4.0000

D3500-1



Saddle

355605-10/8/2008

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

46

47119

12

47350

5

52326

20

53792

9

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Page 2

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IPP Rev:B Update qty of MS21042L5 06-09-12 KJ
IPP Rev:C Rev B 07-11-15 DD
IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

D3502-1

Manufactured No

200

Each

83.0000

2.0000



Support



BT 10-08-19

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

5

41603

2

42968

2

47120

1

Main Warehouse

ST107

40

52903

40

Main Warehouse

ST168

38

50287

38

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 IPP Rev:C Rev B 07-11-15 DD
 IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

MS21920-20

Purchased

No

200

Each

115.3000

2.0000



M 114 687 x2



ST 10-08-19

Clamp (per MIL-DTL-8783C)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

115.3

103478

2

106484

12

109269

9.3

110536

10

112307

32

112624

39

112793

11

MS27039-1-10

Purchased

No

200

Each

203.0000

1.0000



Screw

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

203

112794

89

112828

14

112940

100

x1

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 IPP Rev:C Rev B 07-11-15 DD
 IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

AN4-41A

Purchased

No

220

Each

242.0000

8.0000



Bolt



10/16/2009

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

242

105940

4

110363

16

110731

50

111424

50

112082

22

113359

100

8

AN4-6A

Purchased

No

220

Each

1,559.0000

16.0000



Bolt



10/18/2009

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

1559

112314

159

112641

100

112720

100

112829

300

112933

300

113149

600

10

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Start Date: 1/20/2010

Required Date: 2/9/2010

Start Qty: 1.00

Required Qty: 1.00

AN5-32A

Purchased No

220

Each

175.0000 4.0000



Bolt



M114056 10/8/2009

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

175

106242

3

106519

4

110363

17

112805

1

112933

50

113121

100

AN960JD416 11/15/149004032

Purchased No

220

Each

149.0000 32.0000



Washer



M115000 10/8/2009

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

149

112314

149

16941

0

AN960JD516

Purchased No

220

Each

0.0000 8.0000



Washer



M114742 10/8/2009

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 7

Work Order ID: 55511

Parent Item: D350-748-101

Parent Item Name: Crosstube Installation, High Fwd

Start Date: 1/20/2010

Required Date: 2/9/2010

Comments: IPP Rev:A New Issue 06-07-05 JLM
IPP Rev:B Update qty of MS21042L5 06-09-12 KJ
IPP Rev:C Rev B 07-11-15 DD
IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

D3501-1 Manufactured No 220 Each 523.0000 16.0000
Bushing

10/18/08

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	523	
45402	19	
45918	200	
48268	204	
53779	100	

MS21042L4 Purchased No 220 Each 3,697.000 24.0000
Nut

11/14/08 10/18/08

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	3697	
102552	6	
104248	6	
110507	184	
111827	2501	
113422	1000	
15924	0	

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Shop Packet Print

Page 7

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Page 8

Work Order ID: 55511



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IPP Rev:C Rev B 07-11-15 DD
IPP Rev D Combined manufacturing 08.04.02 EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

220

Each

550.0000 4.0000



Nut



M1148 13 10/18/2008

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

550

110382

10

111636

1

112314

39

113523

300

113537

200

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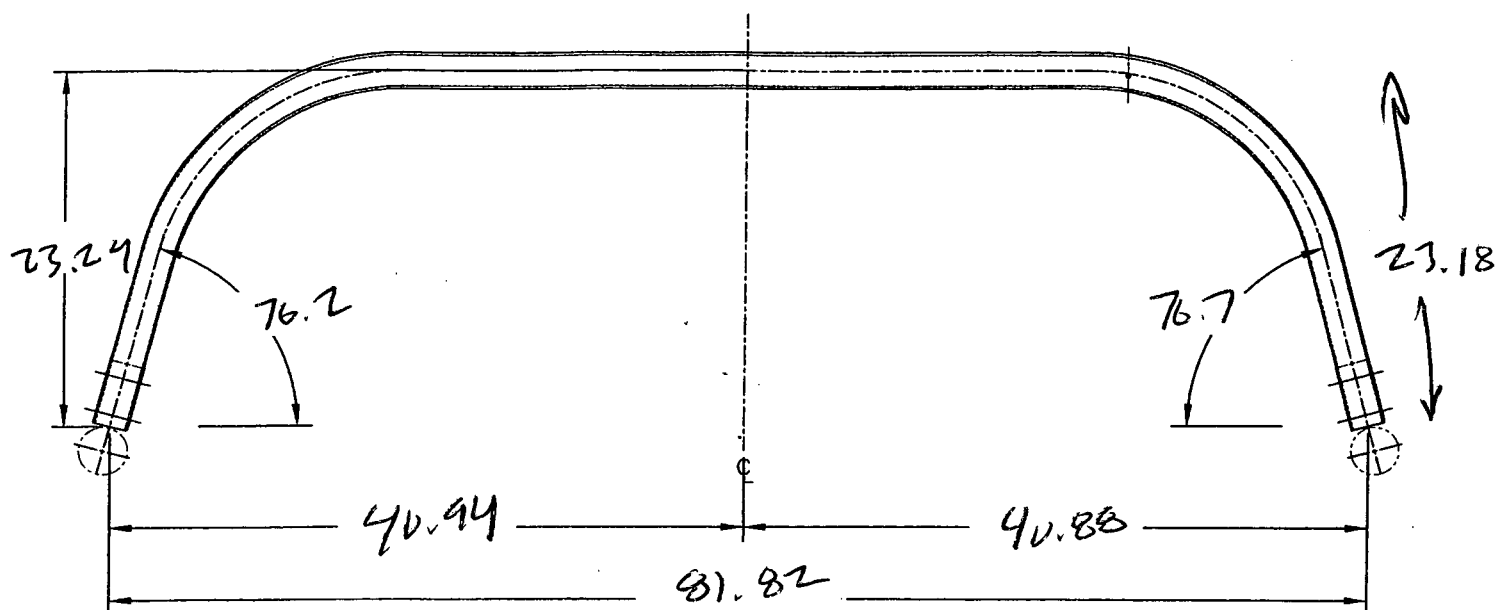
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DART AEROSPACE LTD		Work Order:	55511
Description: Crosstube High Fwd (AS350/355)		Part Number:	D350-748-101
Inspection Dwg: D350-748-141	Rev: D E		Page 1 of 1

10.01.19

Required Dimension	Min	Max
Height	23.13	23.37
1/2 Span	40.78	41.02
Angle	75	77
Total Span	81.56	82.04



Comments
Twist = 0.138

QC15 Inspection	CP
Date	10.06.01

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	

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Item	Qty -141	Part Number	Description
1	X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6017-115	CROSSTUBE
3	2	D3502-1	SUPPORT
4	2	D2856-400-710	ABRASION STRIP
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

55511

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6017-115
FINISHED LENGTH = 110.270±0.06
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING.
- 12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
R 2009-10-29

E	REVISE GENERAL NOTES; UPDATE TO CURRENT ADD STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); TOLERANCES (ZN C6-3, D1-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	06.10.31
C	ADD CAD PLATING	CP	06.08.14
B	ADD D6017-115 & PRIME AND PAINT	CP	06.06.30
A	NEW ISSUE	CP	06.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. E
MFG. APPR.	RF	D350-748-141	SHEET 1 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

Dart Aerospace Ltd

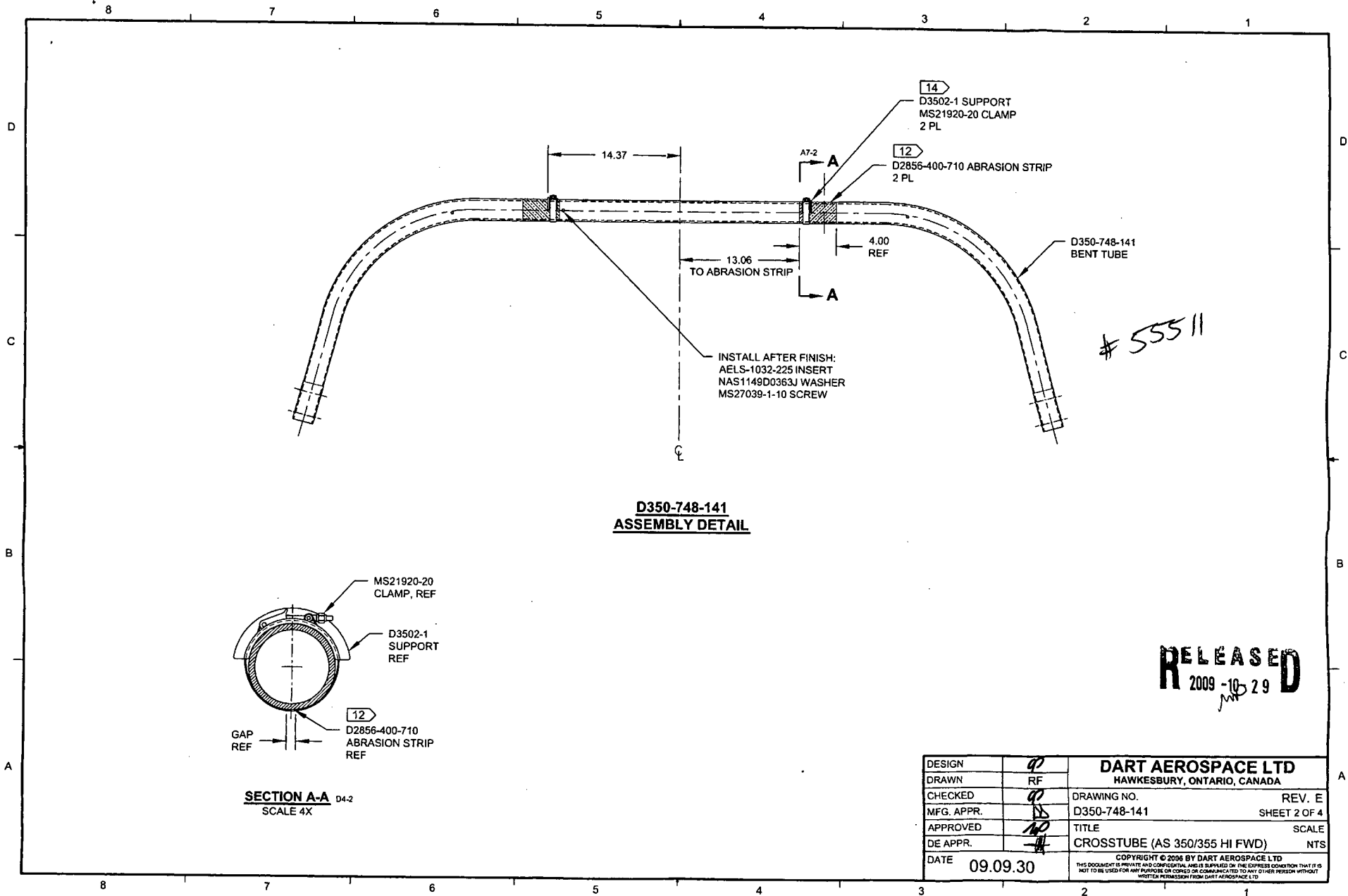
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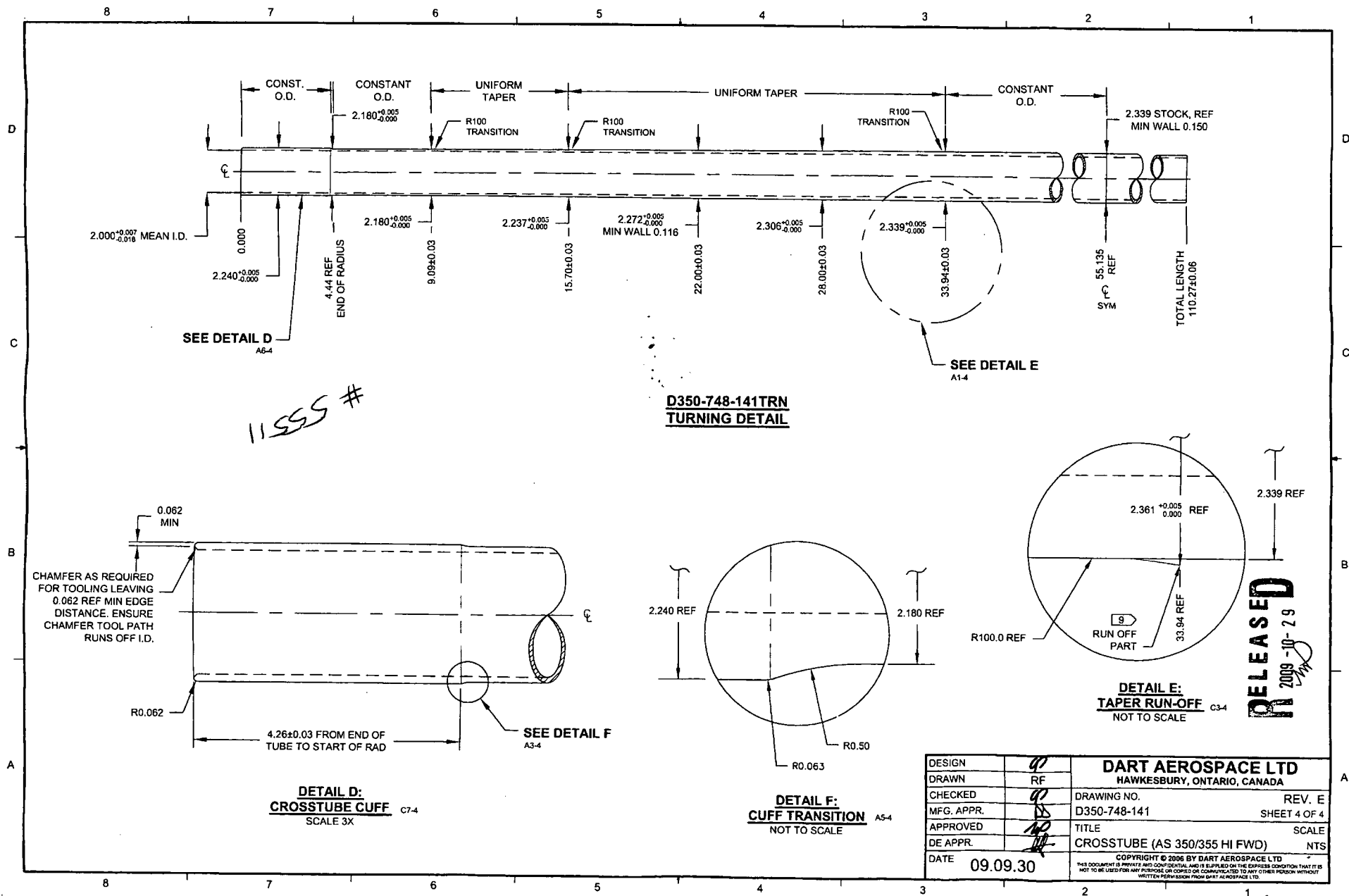
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